SOME OBSERVATIONS ON BEAVER CULTURE WITH REFERENCE TO THE NATIONAL FORESTS

By Smith Riley

The Federal Government has been entrusted with the responsibility of protecting and bringing to their highest use 156 million acres of public forest land in this nation. The protection, culture and use of the trees, of course, is the first purpose. However, when full consideration is given to the variety of the types embraced in these reservations, it will readily be seen that the possibility of cultural use covers an enormous field. Obviously, in the establishment of reservations to cover certain types of land, full recognition must be give to the place these lands occupy in national use and no opportunity should be lost to have them do their part in economic production. There are many uses to which lands producing trees can be put without interfering with the principal purpose.

It has been said that the demand for fur has existed since primitive man sought skins to shield his body from the cold. This demand is fundamental and will endure while man inhabits the earth and furs are to be had. Its strength can be judged by the volume of trade it supports. In 1913 the dressed and manufactured furs imported into the United States were valued at more than $15,000,000. North American furs annually marketed in the United States and England have an approximate value of $60,000,000. These figures show the commercial importance of fur, and in addition to this the fur trade furnishes a livelihood for many thousands of workers in the factories and stores of the country.

The fur resources of the United States have been destructively used throughout the whole life of the nation. In the history of the fur trade there is not one instance of constructive action looking to the building up of this valuable resource. In Chittenden's accounts of the far western trade he repeatedly refers to the detrimental results in the destructive methods employed in the development of the trade. In the early days the Government refused to limit the competition which did more than anything else to decrease fur production. Of later years as some states passed laws controlling the taking of fur-bearing animals nothing has been done to define fur production areas or to stabilize production by ascertaining that amount of fur of the different kinds which a given region should produce. That such action was entirely possible is shown in the experience of Canada,

where the strife of rival companies bid fair to destroy a vast resource when steps were taken to limit the activities of each company to a given region. This act alone, aside from any laws controlling the catch, did much to stabilize the industry through permanent interest in production from a given region over a long period of time. The trappers dealing with the companies were encouraged to leave animals for breeding. Later, I believe, laws were enacted to enforce this very point.

In many of the states where there are National Forests trapping beavers is prohibited, though provision is made to take such animals as destroy property. Little interest is taken in the protection of fur-bearing animals, with the result that applications to take beavers on the grounds of active damage are not investigated, resulting in much taking of beavers without compliance with the laws for protection.

Where there are closed seasons or where trapping fur can be carried on only under permit, no attempt has been made to ascertain the productive capacity of the region, with the result that, even with the closed seasons upon some of the more important animals, in many of the states, the fur resources of the United States have steadily diminished during the last half century, far beyond any justification. Present conditions point beyond a doubt to further shrinkage. The decrease has been in the quantity of the better pelts and not in the total value of the catch.

Beavers, otters, martens and fishers have disappeared from much of their former range, and even minks, raccoons, and skunks have become scarce in some localities. The result is that many kinds of thinner furs have come into the market, with an almost prohibitive price upon beaver fur. The following statement is taken from Chittenden's History of the Fur Trade in the Far West:

> The great importance of the beaver in the life of the hunter and trapper arises almost entirely from the commercial value of its fur, which is one of the finest that nature produces. At this early period in particular it was in great demand. An average price was four dollars per pound and as the little animal carried from one to two pounds on its body the premium for its destruction was from four to ten dollars according to the size and the prevailing price of furs. As the streams of the west—of the whole country for that matter—originally swarmed with these animals in numbers that rivaled the illimitable buffalo herds of the plains, it will be readily understood what a mine of wealth here lay open to the industry of the trader and the trapper.
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> Every stream of the west was as rich as if sands of gold covered its bottom—a richness moreover, which if gathered with judgment and not to the degree of extermination, would renew itself by natural increase.

The beaver also supplied another article of commerce, a secretion from two small glands of the body. This was always known in the commerce of the mountains as castorum. In the arts it is more commonly called castor. In the mountains its value was about three dollars per pound. The castorum was used as the beaver's bait, and thus the little animal itself supplied the means of alluring its race to destruction. The extensive use of the beaver fur in the early years of the century caused an increase in exportation from America to Europe, reaching as high as 200,000 skins annually. This great draught on the supply led to the rapid extermination of the beaver.

In Mr. Chittenden's book, The Yellowstone, is the following statement: "but a business carried on with such relentless vigor naturally soon taxed the resources of nature beyond its capacity of reproduction. In regions under the control of a single organization, as in the vast domains of the Hudson Bay Company, great care was taken to preserve the fur-bearing animals from extinction. In the United States territory the excess of competition made any such provision impossible."

There is not an instance in any section of the country of a departure from the original destructive policy. It is true, protective laws have been passed by many of the states but under the existence of the laws there has been no systematic study of a plan for stable production. The growing sentiment for wild life preservation coupled with the realization of the place beavers fill as water conservers in the irrigation regions has done much to direct attention towards better methods of protection. This has been particularly noticeable in those states where there has been a closed season and the animals have increased to such an extent that a cry has been raised of damage to crops. Those who wish to prey upon the beaver seek to gain their ends by noising their destructive tendencies.

There is no question about the damage done by beavers to both ditches and crops, so their development in an agricultural district requires constant attention to prevent damage. In face of this fact there are many ranchmen or agriculturalists who accept the trouble entailed by the animals for the satisfaction of having them upon their property.

In Colorado, which has had a closed season for many years, with a provision in the law for taking such animals as cause damage, the beavers have, in spite of the wholesale disregard of the law, increased to such an extent that repeated efforts are being made to change the law so that the animal can be taken without restriction. This shows their persistence and what might be done with them where

suitable culture areas are available. There is much stream area in the range of ditch-heads and cultivated lands where beavers can exist to advantage with little property loss. I do not believe there exists any general sentiment among those interested in lands of this type for the complete elimination of the animals. There are those who deplore the property loss and would destroy the beavers completely, feeling that property should be first and seeing no value in the animals. There are those who covet the products of the beavers and agitate the damage feature to gain the assistance of those who would destroy the animals to protect property. Considering the failure of two legislatures to open the season, I feel that those in favor of protection are in the majority.

If there were to be considered only the stream-reaches in the range of ditches and cultivation, the general conditions would offer many features encouraging to a study of a workable plan for production. When we add to this the many miles of suitable water well supplied with food and entirely removed from conflicting interests, the possibilities for a substantial return from the lands and the development of an industry which will not interfere with the land production in other ways appear very feasible. The National Forests are for the most part mountainous lands which will remain in a wild state and they therefore offer excellent culture areas for fur animals. Another point which should be given full consideration is that the forest lands controlling the upper waters of all the principal streams in the mountain country are the natural culture grounds for these creatures. Besides, the nature of the administrative units creates an obligation for the complete production from the lands.

The present status of the beaver in the Cochetopa Forest in Colorado is an excellent example of what can be done in the average mountain region suitable for beaver culture. It is estimated that this Forest which covers some 900,000 acres contains 12,000 animals distributed over about half the available water area suitable for production. As the animals were causing damage to ranch property in one locality near the forest boundary, a plan was drawn up for coöperative trapping with the state game department. It provided for the extermination of the beavers where they were committing actual damage; for their increase unmolested in streams of the Forest not fully stocked; and finally for the transplanting of the beaver to streams where they do not at present exist, and where food and other conditions are thought favorable for their propagation.

The trapping was done on Cochetopa Creek. This stream, about 15 miles in length within the Forest boundary, has an almost continuous series of dams from the boundary to above timber line. Below the Forest there are several ranches where the beavers were causing damage. The damage consisted in flooding hay meadows and obstructing irrigation ditches, and was investigated by the local forest officers before a recommendation for the trapping was submitted. The stream, therefore, afforded a combination of both conditions under which trapping was justified; that is, a fully stocked stream and also a locality where the ranchers were suffering actual damage.

Upon the recommendation of the Forest Service, a trapper was sent by the state with instructions to work under the direction of the forest supervisor. When he arrived the latter part of April, the work was outlined to him as follows: (1) To try to exterminate the beaver on the ranches below the Forest where the owners desired this to be done, and for a distance of half a mile within the Forest to prevent interference with a big irrigation ditch; (2) to reduce the number for a distance of about five miles within the Forest, to give the remainder room to increase without working down upon the ranches and causing an immediate recurrence of damage; (3) to leave those on the upper courses of the stream unmolested with the idea that, if the trapping proved too heavy or caused the beaver to migrate to another locality, they would work down the stream as they increased, thus restocking the portion trapped.

There was no actual evidence that heavy trapping might cause the animals to migrate, but the work being new and in a somewhat experimental stage, it was thought best to leave them undisturbed on a portion of the stream.

Ice prevented operations when the trapper arrived, so he put in his camp and looked over the ground in preparation for the work. He started trapping about the first of May and trapped until the first of June. During this time he caught 132 beavers with No. 4 Newhouse traps, using twenty.

In regard to costs it is regretted that actual figures can not be given as the local forest officers did not know definitely whether the trapper was paid a salary or was allowed a part of the hides. However, regardless of how the state handled the matter the net revenue must have been considerable, in view of the size of the undertaking. The local forest office was informed that some of the hides brought as high as $33, and that the total gross returns were $3,000. Assuming that

the state was able to hire the trapper for $100 per month, and that the expense of the trip was about $100 in addition, which seems reasonable, the cost of trapping the beavers would be about $1.50 each.

The trapping was not sufficiently thorough, on and in the immediate vicinity of the ranches, in that the beavers were not exterminated, and they may again become a source of damage. However, if trapping can be done at frequent intervals on the stream, this will likely be obviated.

Along the five-mile stretch within the Forest, there is a noticeable reduction in the number of beavers, but this is not as marked as might be expected. Observations made the following fall indicate that with three or four exceptions all dams within the stretch are still inhabited. This would indicate that the trapping within the Forest has been sufficiently conservative; and if desired, the stream could be safely trapped again next spring without reducing the stock below normal; that is to say, probably not more than the normal annual increase for the stream has been trapped. It is planned to make further observations of the results next summer, and to defer recommendations for further trapping on this stream for the present. It is planned, if the state can be induced to send one, or preferably two trappers, next spring to undertake similar work on two other creeks, both of which are heavily stocked and along which some damage to ranches is occurring.

It might be added further that the estimate of the number of beavers in Cochetopa Creek and tributaries was 1,200, and that the apparently small reduction in numbers following last spring's trapping would indicate that this estimate is conservative. It is more likely under rather than over the actual number. It might also be added, that 20 beavers were trapped from this same locality on the stream under permits to local ranchers, the fall before the state trapper undertook the work, making the total number trapped from the stream during the past year 152.

The State trapper failed to take any of the beavers alive for planting, so a permit was issued by the state to the forest officers to do the live trapping.

It was planned to use the woven-wire-corral method of trapping the beavers, but owing to the lateness of the season and probable length of time it would take to get them in this way, ordinary steel traps were resorted to and they were visited at short intervals so that any animals caught would not injure themselves. It is realized that this was a very

crude way to do the work, and might result in considerable injury to the specimens taken. Fortunately this was not the case with the two trapped, and both of them were removed from the traps without suffering severe injury.

An ordinary box was made 2 x 2 x 3, with sliding door, for transporting the animals. One quarter inch cracks were left between the boards to allow for air. It was lined with chicken wire to prevent the animals from gnawing, and both were placed in the same box. They made no attempt to gnaw out and caused very little disturbance while in the box, being comparatively docile after being once captured. One was inclined to fight while being removed from the trap, until released from it. The first one was placed in the box directly from the trap; the second one was carried to the box in an old gunny sack. It scratched around some, but did not attempt to gnaw its way out. The two captured were two-year-olds. In trapping the pair an extra male was caught. It was transferred to Carnero Creek with the idea that we might later be able to get a mate for it, but we were unable to do so.

The beavers were transported by automobile from the place trapped on Cochetopa Creek to the upper Saguache Ranger Station, and thence by wagon about 10 miles to where they were released in Houselog Creek. The first beaver captured was in the box three days and two nights before being released. He apparently suffered no injury from the confinement or from the long period out of the water. Both were in good condition when released in Houselog Creek.

The beavers were released just above the upper ranch on Houselog Creek. The sentiment of the local ranchers and homesteaders along the creek is favorable to the propagation of beaver, they feeling that if the stream becomes stocked, they will benefit through the holding back of the water, making more for irrigation in the late summer.

It is, of course, too soon to predict the result of the work, but it is thought that it will be successful. There is an abundance of aspen along the stream for food. Two or three weeks following the release, little was seen of the beavers, but aspen cuttings were observed at different places along the creek. They apparently wandered around considerably before settling down; but the last observations of Ranger Gallegos showed that they had established themselves just above the fence of the upper ranch on the creek, and had built a den in the bank. They have not built a dam, but it is doubtful if this is essential, since some of the beavers in this locality do not construct dams.

When the beavers were released from the crate and turned into the creek, they were apparently somewhat bewildered. One started up the creek and the other down. In order to keep them together, Ranger Gallegos headed off the one going down the creek, and started chasing it back toward the other one. The empty crate was lying on the bank, the beaver in passing it evidently regarded it as a place of protection, and ran back into it. Ranger Gallegos then closed the sliding door, and carried it up stream to the other one and released it. In the meantime, the other one had worked up stream, and finding a hole in the bank, stuck his head into it and remained there. He was prodded up with a stick, but would not move, seemingly considering himself out of sight and protected.

The plan of management provides for the restocking of all streams of sufficient size in which beavers do not at present exist, and along which there is sufficient aspen or other food for them. There are only five such streams on the Forest. It is hoped to continue the work until a small breeding nucleus is placed in each of these streams, with the coöperation of the state if it can be secured. Judging from the results of three transplanted in Itasca Park, Minnesota, in 1900, and the rate at which they are thought to be increasing there, a large nucleus will not be necessary; but if sufficient coöperation is extended by the state in the way of furnishing a professional trapper to assist, four to six per stream would be better. This would serve to bring up production in the shortest period of time and serve to show what improvement in stream conditions can be expected from the ranchmen's point of view. A clear demonstration of the stabilizing effect upon the stream flow of beaver activities will be of value in fixing their place.

It is planned as an experiment to try to catch them with a woven-wire crate or net placed with the opening over the entrance to the house or to the entrance of the den in case of bank beaver, first closing up the other one of the two entrances. Then, by poking them up in the den, it is proposed to force them out and into the net. This should work during the daytime, since from what information there is available they remain in the dens or houses during the day, and are not easily disturbed. This has been talked over with one or two of the local trappers who think it feasible. If it fails, the wire-corral method will be used.

Also in undertaking any future work, it is planned to catch the beaver earlier in the season, preferably about the first of August, since high water is then over, making it easier to trap them, and allowing the

planted specimens more time to become located, build a house and store food before winter sets in.

The estimate made of the beavers in 1918 showed 12,000 in the streams within the vicinity of the Forest. While this may have been a little high at the time, it is believed to be conservative at the present time. Anything approaching an accurate census, however, has not yet been made. On streams, like Saguache Creek, which are subject to flooding and washing out of dams, not nearly all of the beavers construct dams. They often simply burrow into the bank and make dens without them. This fall numerous runways and cuttings of willows were observed along the creek, and dens without dams. The observations of local trappers and also of the state trapper agree with the information given by the Biological Survey that they average about four kits to the litter. From information obtained from Mr. J. D. Figgins of the Colorado Museum of Natural History, they have a litter each year, and the young ones remain with the old until they are two years old, or until the third litter is born. This would indicate that there are two litters in most dams. There is one point, however, which has not been cleared up. That is, whether the secondary dams are also regularly inhabited. Some claim that the two-year-olds occupy them when pushed out by the parents, but there is a difference of opinion as to this. With the gathering of a little more information as to their habits, it is hoped to make a more accurate census, but it is going to require time and close observation.

Likewise, there is very little information about natural losses and rate of increase. Estimates of the numbers in Long Branch Creek showed 50 beavers in 1908 and 3,000 in 1918, indicating an average yearly increase for the period of about 50 per cent. This, however, is based only on estimates. In order to be conservative, an annual increase of 25 per cent has been assumed until such time as more accurate information can be obtained. It is evident at any rate that they increase rapidly, judging by the new dams constructed each year.

I have traveled for days on end through the Forests of Wyoming over lands of first quality for fur animal production. A trapper at Valley Wyoming wrote me not long ago that he had out 200 miles of trap lines and he was not doing so well because the martens were scarce. That while there was lots of feed such as rabbits and squirrels in the region where he was trapping, the martens were not there and he thought they had just been trapped out. In fact, he believed the only hope for the marten is a closed season.

The Forest Service has an agreement with the Wyoming State Game Department which provides that all applications for trapping permits will be submitted to the forest supervisor concerned for consideration and recommendation before action is taken. Now it is true that the present state game warden, dealing in generalities, has expressed himself in favor of the destruction of all fur animals because he claims they prey upon game birds. Upon the other hand, the Wyoming law is so worded that the issuance of trapping permits is discretionary and there are some eight forest supervisors supported by observant rangers conversant with all animal range types in the state. Surely an active force of such size in a fertile field should be able to bring forth sufficient evidence to convince one man of the unsoundness of his position. Game birds were plentiful in the Shoshone National Forest when I first knew it fifteen years ago at a time when fur animals were much more numerous than they are now. Food and seasonable weather have far more to do with the prevalence of game birds, say the grouse family, than the presence of fur animals. Continued cold wet weather when the chicks are just hatched plays havoc with game birds just as a scarcity of food in any section may cause the birds to migrate. The weasel, I have no doubt, is most destructive to all bird life; however he is not much sought by the average fur trapper.

My idea would be the preparation of maps of the Forests for the state game warden designating certain watersheds where trapping of stated animals should be prohibited for a given period of years. There must be sound reason for this recommendation, set forth in detail. Such elimination of the taking of fur animals to let them reach a normal production should not in any way interfere with trapping wolves, coyotes and cats.

Certainly the subject of fur production offers an excellent field for action with obligations for initiative upon the proprietors of the land best suited to such purposes.

Washington, D. C.